Amendments to the Specification

The paragraph starting at page 1, line 21 and ending at page 2, line 11 has been amended as follows.

In a conventional technique of printing a document produced by an application on a computer, when it is desired to print the document in a plurality of different formats, it is needed to perform printing as many times as the number of formats and it is needed to specify a format each time the printing is performed. For example, in the case where a document is printed on one or more OHP transparency sheets which are to be used by a presenter in a presentation and also printed on one or more sheets of usual paper in an N-up (N-pages/sheet) format which are to be distributed among participants in the presentation, printing on transparency sheets is first performed, and then, after changing the setting of a printer driver or application software, printing of the distribution document in the N-up format is ~~preformed~~ performed to obtained a desired number of sets of documents to be distributed.

The paragraph starting at page 7, line 9 and ending at line 12 has been amended as follows.

Fig. 15 is a flow chart illustrating a process of producing print data, performed by an information processing apparatus, according to the second embodiment of the present invention;

The paragraph starting at page 7, line 13 and ending at line 17 has been amended as follows.

~~Fig. 16 is a diagram~~ Figs. 16A and 16B are diagrams illustrating an example of the content of print data produced by a printer driver in a normal printing mode and also illustrating an example of the content of print data produced in the presentation mode according to the second embodiment of the present invention;

The paragraph starting at page 9, line 23 and ending at page 10, line 20 has been amended as follows.

A RAM 2 is used by the CPU 1 as a main memory or a work area. A keyboard controller (KBC) 5 controls an inputting operation performed via a keyboard 9 or a pointing device (not shown). A CRT controller (CRTC) 6 controls a displaying operation of a CRT display (CRT) 10. A disk controller (DKC) 7 controls accessing to the external memory 11 such as a hard disk (HD) or a floppy disk (FD) on which a boot program, various applications, font data, a user file, an edit file, a printer control command producing program (hereinafter referred to as a printer driver) and the like are stored. A printer controller (PRTC) 8 connected to a printer 1500 via a bidirection interface 21 serves to ~~controls~~ control communication with the printer 1500. The CPU 1 also executes the operation of converting (rasterizing) display information into outline font data in the RAM 2 so that the information is displayed in a WYSIWYG fashion on the CRT 10. The CPU 1

opens one or more windows in response to a command issued by clicking a mouse cursor (not shown) displayed on the CRT 10 and executes specified data processing. Before executing a printing operation, a user can open a printer setting window to perform setting associated with the printer, selection of a printing mode, and setting associated with the printer driver.

The paragraph starting at page 10, line 21 and ending at page 11, line 13 has been amended as follows.

In the printer 1500 including the print control apparatus according to the present invention, a printer CPU 12 outputs an image signal serving as output information to a printing unit (printer engine) 17 connected to a system bus 15 in accordance with a control program stored in the program ROM in the ROM 13 or a control program stored in an external memory 14. The program ROM in the ROM 13 serves to store the control program or the like used by the CPU 12. A font ROM of the ROM 13 stores font data or the like which is used to generate the output information. In the case of a printer which does not have the external memory 14 such as a hard disk, a data ROM in the ROM 13 is used to store information used by the host computer. The CPU 12 is capable of ~~communicate~~ communicating with the host computer via an input unit 18 to transmit information from the printer to the host computer 3000. A print control program according to the present invention is stored in the program ROM in the ROM 13 or the external memory 14.

The paragraph starting at page 24, line 7 and ending at page 25, line 1 has been amended as follows.

In step 1101, the CPU 12 extracts the body of the print data 602 shown in Fig. 6 from the print data received from the host computer and temporarily stores the print data 602 in the RAM 19 or the hard disk 20 provided in the printer as shown in Fig. 1. In the above process, the print data described in the printer language is analyzed and a display list in an intermediate data format, which can be easily converted into a bit map form, is produced. The obtained data is sorted in terms of bands in the order in which the bands are to be printed. In the present embodiment, although an electrophotographic printer is employed as the printer 1500 serving as the print control apparatus, no page memory is installed on the printer 1500 to reduce its cost, and thus band printing is necessary. In this case, it is impossible to stop outputting video data in the middle of a page, and it is needed to convert each band data into ~~an~~ a raster image within a particular length of time in which a sheet is forwarded. The time needed for conversion into the raster image can be reduced by sorting print data in the printing order and producing a display list thereof.

The paragraph starting at page 25, line 2 and ending at page 26, line 3 has been amended as follows.

Thereafter, in step 1102, the CPU 12 performs printing in an original layout format using the print data temporarily stored in step 1101, in accordance with the

procedure described in the print control program stored in the ROM 13. In the present embodiment, OHP transparency sheets are manually fed from a specified tray. Herein, a message "Please place a transparency sheet on the tray" may be displayed on the operation control panel 1501 to prompt a user to place a transparency sheet. When the print data described in the printer language is analyzed in the previous step, the tray from which sheets are to be fed is determined, and the print data is output such that printing in the 1-up format is performed on each sheet (1-page/sheet format) provided from the specified tray. After completion of printing on the respective pages, the display list is deleted because the storage capacity of the RAM 19 is limited. However, the print data itself is retained without being deleted. This is because print data described in a printer language generally has a small size such as several ~~ten~~ dozen to several hundred Kbytes and thus it occupies a small part of the memory area of the printer memory. However, data in an intermediate format has a large size such as several hundred Kbytes to several Mbytes, because data in the intermediate format is similar to ~~an~~ a raster image and font data is not rasterized. After completion of printing on presentation sheets, the process goes to step 1103 without ending the printing operation.

The paragraph starting at page 30, line 5 and ending at line 10 has been amended as follows.

The modules of the information processing apparatus according to the present invention ~~is~~ are described in further detail below with reference to Fig. 14. The

modules shown in Fig. 14 are placed in the RAM 2 so that the CPU 1 can perform various operations in accordance with programs of the respective modules.

The paragraph starting at page 31, line 21 and ending at page 32, line 2 has been amended as follows.

In the case where the spool file manager 1404 determines that the printing can be performed using the graphic engine 202, the despooler 1405 is loaded from the external memory 11 into the RAM 2, and a command is issued to the despooler 1405 to perform printing of the page description file described in the intermediate code in the spool file 1403.

The paragraph starting at page 32, line 3 and ending at line 9 has been amended as follows.

The despooler 1405 processes the page description file described in the intermediate code in the spool file 1403 in accordance with the content of the job setting file including the setting information in the spool file 1403 thereby reproducing the GDI function. The resultant ~~GUI~~ GDI function is output via the graphic engine 202 serving as the printing means of the OS.

The paragraph starting at page 33, line 24 and ending at page 34, line 8 has been amended as follows.

In step 1503, the spool file ~~manage~~ manager 1404 reads the PDF data serving as the intermediate data from the spool file and transfers it to the despooler 1405 together with data indicating the layout mode of the print job described in the setting file. The despooler 1405 expands or reduces the PDF data in accordance with the layout mode so as to reproduce the image representing data (GDI function). The resultant print data is output to the graphic engine 202 serving as the printing means of the OS. Thereafter, the process is performed in a similar manner as in the conventional process.

The paragraph starting at page 34, line 9 and ending at line 21 has been amended as follows.

On the other hand, in step 1504, the spool file ~~manage~~ manager 1404 analyzes DEVMODE or the content of the setting file to determine the manner in which printing on presentation sheets is to be performed. In the case where the printing is specified to be performed on the same type of sheets for all sets of documents in the window for the detailed setting of the presentation mode, sheets are fed in the same manner in printing for presentation and printing for distribution. That is, one sheet tray/cassette is specified for the given print job. On the other hand, if the printing is specified to be

performed on different types of sheets, a particular sheet feeding manner (manual sheet feeding (from a tray) in the example shown in Fig. 12) is specified.

The paragraph starting at page 34, line 22 and ending at page 35, line 8 has been amended as follows.

Thereafter in step 1505, the spool file ~~manage~~ manager 1404 reads the PDF data serving as the intermediate data from the spool file and transfers it to the despooler 1405 together with data indicating the layout (1-page/sheet format in default) for printing on distribution sheets. The despooler 1405 processes the PDF data in accordance with the specified layout mode so as to reproduce the image representing data (GDI function). The resultant print data is output to the graphic engine 202 serving as the printing means of the OS. After outputting the image representing data, the setting file and the intermediate data file (PDF) are further retained in the spool file 1403.

The paragraph starting at page 35, line 9 and ending at line 15 has been amended as follows.

In step 1506, the spool file ~~manage~~ manager 1404 analyzes DEVMODE or the content of the setting file to determine the manner in which printing on distribution sheets is to be performed. Herein, the feeding manner specified via the window for the

detailed setting of the presentation mode shown in Fig. 12 is employed (that is, "cassette-1" is specified in the example shown in Fig. 12).

The paragraph starting at page 35, line 16 and ending at line 21 has been amended as follows.

Then in step 1507, the spool file ~~manage~~ manager 1404 analyzes DEVMODE or the content of the setting file to determine the layout mode specified for the printing on distribution sheets and further determine whether a memo space is to be inserted. A message indicating the result is sent to the despooler 1405.

The paragraph starting at page 36, line 17 and ending at page 37, line 2 has been amended as follows.

In step 1509, the spool file manager 1404 detects the number of sets of distribution copies specified via the window shown in Fig. 4, from DEVMODE or the setting file, and the spool file ~~manage~~ manager 1404 determines whether the image representing data has been output from the despooler 1405 as many times as the specified number of sets of distribution copies. If the number of times the printing data has been output is smaller than the specified number, the process returns to step 1508. On the other hand, if the number of times has reached the specified number, the reproducing of the image representing data is ended.

The paragraph starting at page 37, line 12 and ending at page 38, line 1 has been amended as follows.

The print data produced by the printer driver 203 is described in further detail below with reference to ~~Fig. 16. Fig. 16 illustrates~~ Figs. 16A and 16B. Figs. 16A and 16B illustrate print data 502 described in the printer language in the print job (504 in Fig. 5). Fig. 16A shows print data which is produced when a printing mode other than the presentation mode is selected. Examples of such printing modes include a single-side printing mode, a both-side printing mode, and a binding printing mode. In the case where a printing mode other than the presentation mode is selected, the content of print data is not changed during the printing operation for the respective sets of copies, and thus the print data always includes first to *N*th logical pages as shown in Fig. 16A. The specified sheet tray/cassette and the specified number of sets of copies are description in the header.

The paragraph starting at page 41, line 13 and ending at page 42, line 15 has been amended as follows.

A print control system employed herein in the third embodiment has a similar configuration to that employed in the first or second embodiment. Also in this embodiment, as in the first and second ~~embodiment~~ embodiments, it is possible to obtain printed copies in a plurality of different specified output forms (in particular, in different printing formats) simply by issuing a single print execution command. To achieve the

above capability, a print mode called the presentation mode is also provided in the present embodiment. If the presentation mode is selected, the printing operation is specified such that printing on OHP transparency sheets and printing on sheets in an N-up layout for distribution are performed in a single printing operation (that is, printed copies in different formats can be obtained in a single printing operation). The printing operation in the presentation mode according to the third embodiment of the present invention is described in further detail below. Note that the above combination of printing formats in the presentation mode is one of examples allowed in the present embodiment. What is essential herein is to produce print jobs in a plurality of output forms from a single piece of data to be printed, and various different forms may be combined. For example, it may be possible to specify a combination of five sets of copies in the "single-side" printing mode and one set of copies in the "both-sides" printing mode. Another example is a combination of four sets of copies on A4 size sheets and two sets of copies on B5 size sheets.

The paragraph starting at page 43, line 20 and ending at page 44, line 5 has been amended as follows.

First, the setting data stored in the spool file 1403 is analyzed to determine whether or not the presentation mode is selected (step 1901). The setting of the presentation mode is performed by a user via the printer driver setting window shown in Fig. 4. In the present embodiment, the presentation mode is selected from printing methods including the single-side printing mode, the both-sides printing mode, the binding

printing mode, and the presentation mode. In the case where the presentation mode is selected, the number of sets of copies in the N-up format for distribution is further specified.

The paragraph starting at page 47, line 5 and ending at line 13 has been amended as follows.

The present invention described above with reference to the first, second, and third embodiments may be applied to a single apparatus (such as a printer, copying machine, an information processing apparatus, or a host computer) as is the case in the first, second, and third embodiments or may be applied to a system including a plurality of apparatuses (such as a host computer and a ~~printer~~ printer). When the present invention is applied to a system, all processes described in the first, second, and third embodiments may be incorporated.

The paragraph starting at page 47, line 22 and ending at page 48, line 1 has been amended as follows.

In this case, it should be understood that the program code read from the storage medium implements the functions of the invention and thus the storage medium including the program code stored thereon falls within the scope of the present invention.

The paragraph starting at page 48, line 7 and ending at line 13 has been amended as follows.

Furthermore, the scope of the present invention includes not only such a system in which the functions of any embodiment described above is implemented simply by reading and executing a program code on a computer but also a system in which a part of or the whole of the process instructed by the program code is performed using an OS (operating system) on the computer.

The paragraph starting at page 48, line 14 and ending at line 23 has been amended as follows.

Furthermore, the scope of the present invention also includes a system in which a program code is transferred once from a storage medium into a memory provided in a function extension board inserted in a computer or provided in a function extension unit connected to the computer, and then a part of or the whole of the process instructed by the program code is performed by a CPU or the like in the function extension board or the function extension unit, thereby implementing the functions of any embodiment described above.